

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/DK2004/000409

International filing date (day/month/year)
11.06.2004

Priority date (day/month/year)
12.06.2003

International Patent Classification (IPC) or both national classification and IPC
G01W1/16, F03D11/00, F03D1/00, H02G13/00, G01R29/08

Applicant
LM GLASFIBER AS

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/DK2004/000409

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/DK2004/000409

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. IV Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:

- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ not paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

- ☐ complied with
- ☒ not complied with for the following reasons:

see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

- ☒ all parts.
- ☐ the parts relating to claims Nos.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/DK2004/000409

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-24
	No: Claims	
Inventive step (IS)	Yes: Claims	1-24
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item IV

1. The application does not meet the requirement of Rule 13.1 PCT, as it lacks unity for the following reasons:
2. The common concept linking together the independent **claims 1, 6, 20 and 22** is a resistor conducting a lightning current and being heated due to such a current. This common concept is not novel, since any conductor being hit by lightning takes away novelty of this common concept.
3. The following inventions are recognised:
 invention I: claims 1-21;
 invention II: claims 22-24.
4. In addition to the common concept, the claims of **invention I** define measuring the increase in temperature of the resistor in a wind turbine in order to determine the magnitude of the amount of energy contained in the lightning.
5. In addition to the common concept, the claims of **invention II** define geometrical details of the resistor in order to optimize its functioning.
6. The additional features differ from each other to such an extent that they are not considered as same or corresponding special technical features in the sense of R.13.2 PCT. Consequently, a technical relationship involving one or more of the same or corresponding special technical features is absent so that the requisite unity of invention (R.13.1 PCT) does not exist.

Re Item V

1. Prior Art

The following documents are referred to:

D1: EP-A-1 036 937

D2: WO 01/86144 A

D3: DE-U-295 22152

2. Novelty and Inventive step (Article 33(1),(2),(3) PCT) - invention I

1. Document **D1** is considered as the closest state of the art. This document describes a blade of a wind turbine with a lightning receptor. The receptor is conductively connected in series to a resistor which is, in turn, grounded via a grounding wire.

When lightning hits the receptor a current flows through the resistor, which is then heated.

2. The subject-matter of independent **claims 1, 6 and 20** differs from **D1** in that the lightning strike is registered using the temperature increase of the resistor, which is measured. This allows determination of the magnitude of the amount of energy contained in the lightning.
3. None of **D2 or D3** disclose or suggest measuring the temperature increase of the resistor. Therefore, **claims 1, 6 and 20** are new and inventive.
4. **Claims 2-5, 7-19 and 21** are dependent on **claims 1, 6 and 20**, respectively, and as such also meet the requirements of the PCT with respect to novelty and inventive step.
3. **Novelty and Inventive step (Article 33(1),(2),(3) PCT) - invention II**
 1. Document **D1** is considered as the closest state of the art. This document describes a resistor conducting a lightning current (and consequently being heated) which consists of stacked zinc oxide elements.
 2. The subject-matter of independent **claim 22** differs from **D1** in that the resistor element is essentially an elongate object having at its ends an increased expanse transversally to its longitudinal axis. This increased diameter at the ends improves the operating characteristics of the resistor as a lightning magnitude indicator.
 3. None of **D2 or D3** disclose or suggest this particular resistor geometry. Therefore, **claim 22** is new and inventive.
 4. **Claims 23 and 24** are dependent on **claim 22** and as such also meet the requirements of the PCT with respect to novelty and inventive step.
4. **Industrial Applicability (Article 33(1),(4) PCT)**

The subject-matter of **claims 1-24** is industrially applicable.

Re Item VIII

Article 6 PCT (Lack of Conciseness)

The various definitions of the invention given in independent **claims 6 and 20** are

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AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/DK2004/000409

such that the claims are not concise, as they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. This leads to a lack of clarity of the claims as a whole, as it becomes impossible to determine without undue burden the precise subject-matter for which protection is sought. The claims should have included only the minimum necessary number of independent claims in any one category with dependent claims as appropriate (R.6.4 PCT). In the present case it is considered appropriate to use only one independent apparatus claim and only one independent method claim.

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